US008098851B2

(12) **United States Patent**
Stieler von Heydekampf et al.

(10) **Patent No.: US 8,098,851 B2**
(45) **Date of Patent: Jan. 17, 2012**

(54) **USER INTERFACE FOR NETWORK AUDIO MIXERS**

(75) Inventors: **Mathias Stieler von Heydekampf**, Edina, MN (US); **Josh Bartunek**, Chanhassen, MN (US); **Lee E. Minich**, Rochester, NY (US)

(73) Assignee: **Mathias Stieler Von Heydekampf**, Edina, MN (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 165 days.

(21) Appl. No.: **12/727,579**

(22) Filed: **Mar. 19, 2010**

(65) **Prior Publication Data**

US 2010/0303261 A1 Dec. 2, 2010

Related U.S. Application Data

(63) Continuation-in-part of application No. 12/474,630, filed on May 29, 2009.

(51) **Int. Cl.**
H04B 1/00 (2006.01)

(52) **U.S. Cl.** **381/119**; 370/254

(58) **Field of Classification Search** 381/119; 370/254

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

6,122,665	A	9/2000	Bar et al.
7,853,342	B2	12/2010	Redmann
2002/0005109	A1	1/2002	Miller
2002/0144587	A1	10/2002	Naples et al.
2007/0140510	A1	6/2007	Redmann
2008/0167740	A1	7/2008	Merrill
2010/0303260	A1	12/2010	Stieler von Heydekampf et al.

FOREIGN PATENT DOCUMENTS

EP	1319299	B1	12/2005
WO	02/25889	A2	3/2002
WO	2010/138299	A2	12/2010
WO	2010/138299	A3	2/2011

OTHER PUBLICATIONS

Office Action received for the German Application No. 10 2009 059 167.2, mailed on Jul. 26, 2011, 7 pages of Office Action and 3 pages of English Translation.

PCT Search Report received for the PCT Application No. PCT/US2010/034322, mailed on Dec. 20, 2010, 3 pages.

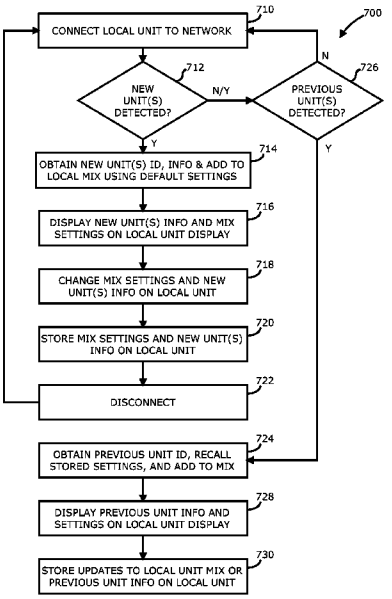
Primary Examiner — Douglas Menz

(74) *Attorney, Agent, or Firm* — Cool Patent P.C.

(57) **ABSTRACT**

Briefly, in accordance with one or more embodiments, a first mixer connects to a network and if a second mixer is detected on the network, the first mixer obtains an identifier for the second mixer, adds one or more audio signals from the second mixer to a mix of the first mixer, and stores a mix setting for the second mixer on the first mixer. If the second mixer is subsequently connected to the first mixer, the first mixer obtains the identifier for the second mixer, recalls the stored mix setting for the second mixer based at least in part on the identifier, and adds one or more audio signals from the second mixer to a present mix of the first mixer based at least in part on the recalled mix setting.

20 Claims, 8 Drawing Sheets



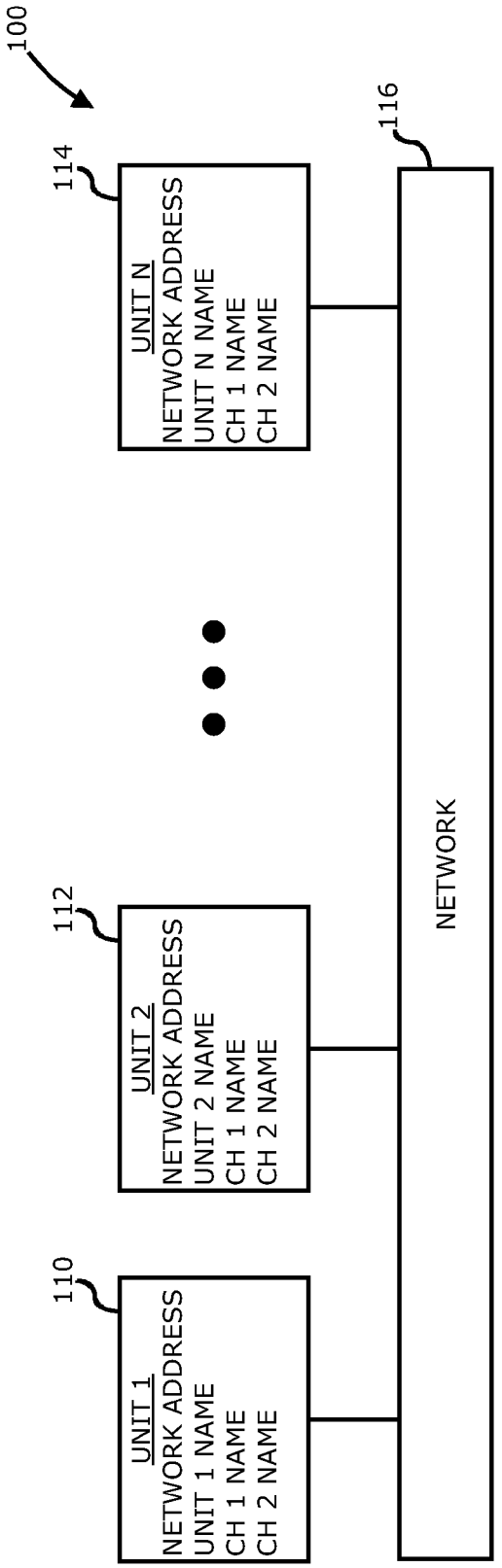

100
114
UNIT N
NETWORK ADDRESS
UNIT N NAME
CH 1 NAME
CH 2 NAME
116
112
UNIT 2
NETWORK ADDRESS
UNIT 2 NAME
CH 1 NAME
CH 2 NAME
110
UNIT 1
NETWORK ADDRESS
UNIT 1 NAME
CH 1 NAME
CH 2 NAME
NETWORK

FIG. 1

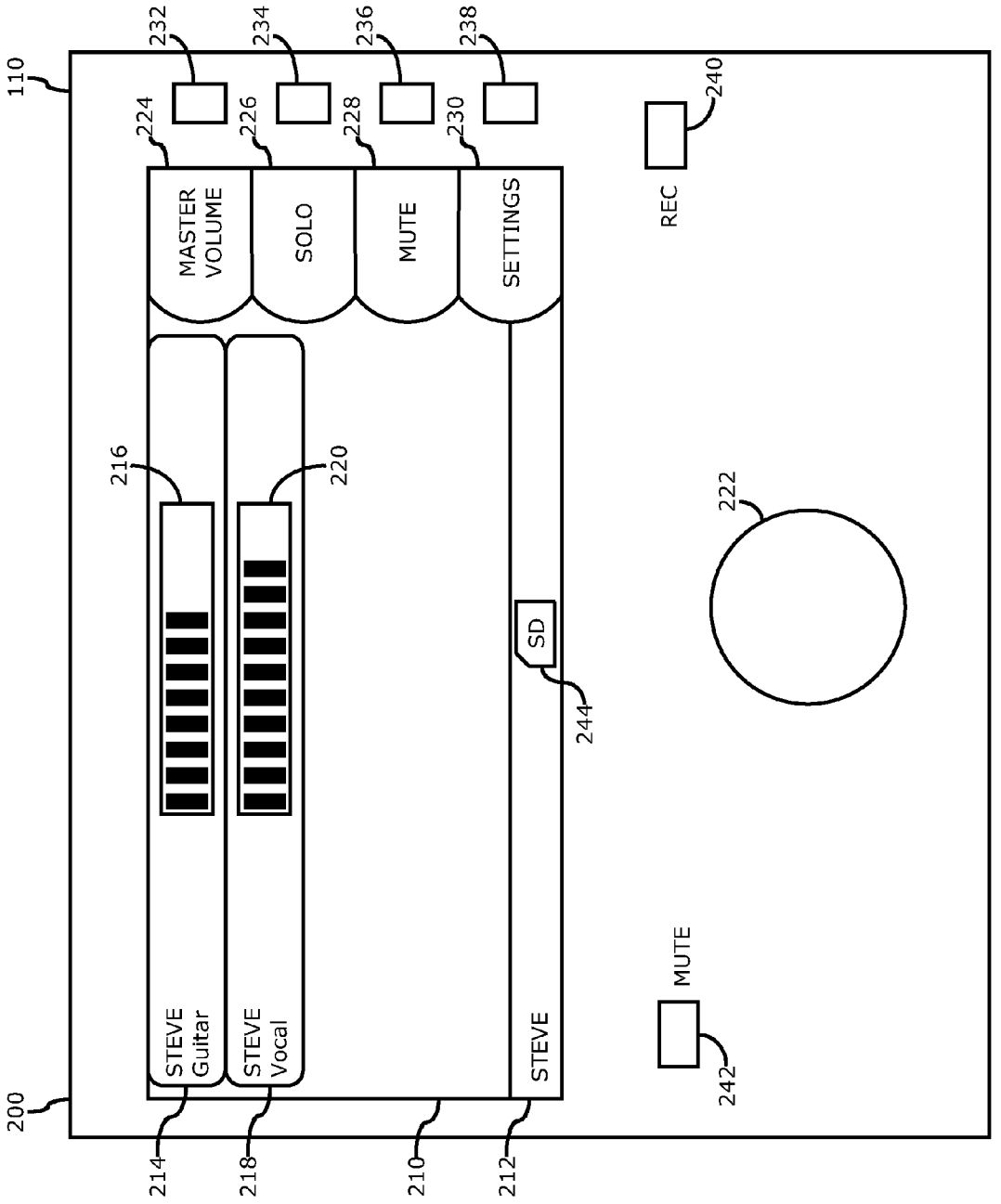

110
200
232
234
236
238
224
226
228
230
MASTER VOLUME
SOLO
MUTE
SETTINGS
REC
240
216
220
222
SD
244
STEVE Guitar
STEVE Vocal
STEVE
MUTE
242
214
218
210
212

FIG. 2

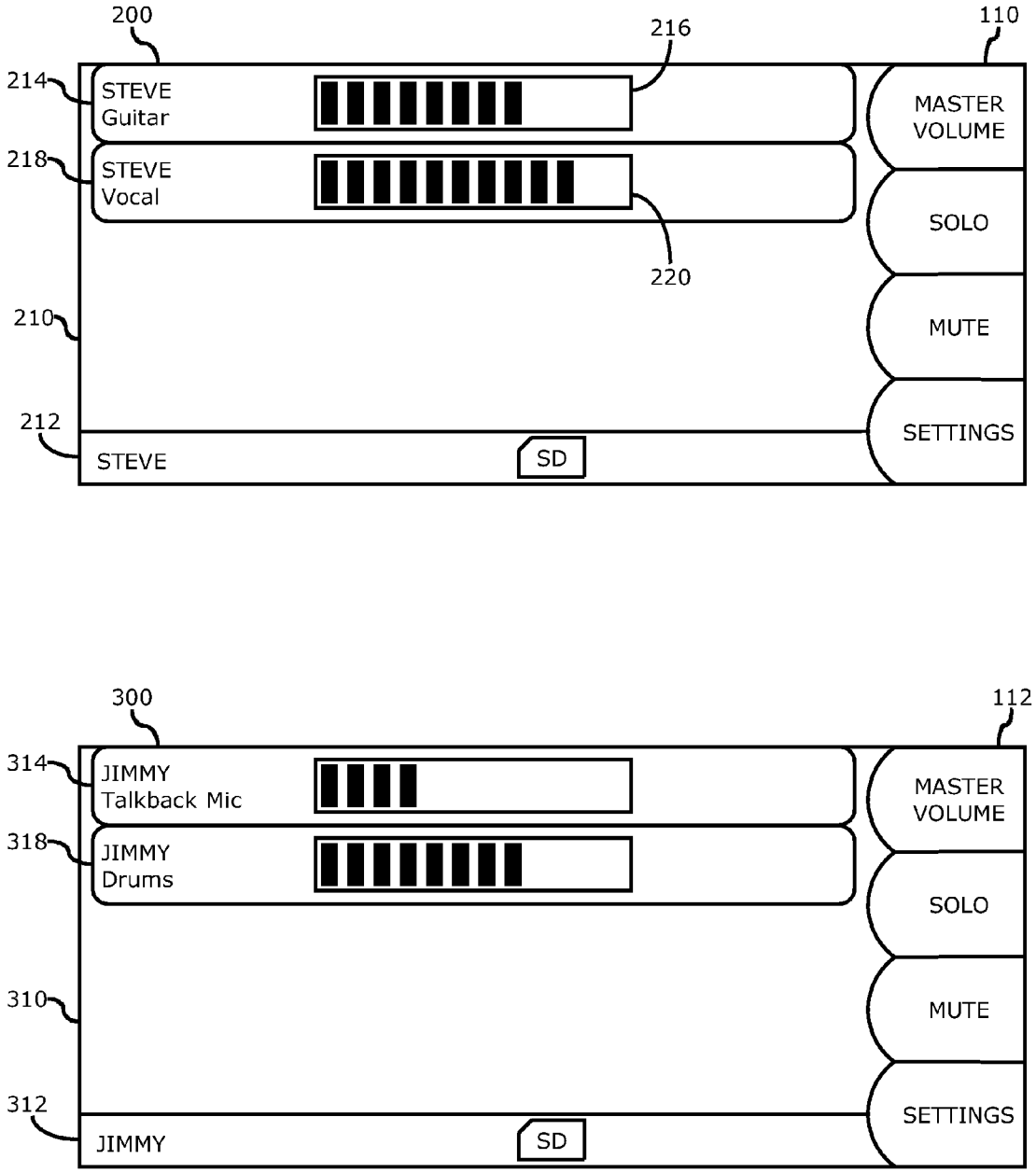

200
216
110
214
STEVE
Guitar
MASTER
VOLUME
218
STEVE
Vocal
SOLO
220
210
MUTE
212
SETTINGS
STEVE
SD
300
112
314
JIMMY
Talkback Mic
MASTER
VOLUME
318
JIMMY
Drums
SOLO
310
MUTE
312
SETTINGS
JIMMY
SD

FIG. 3

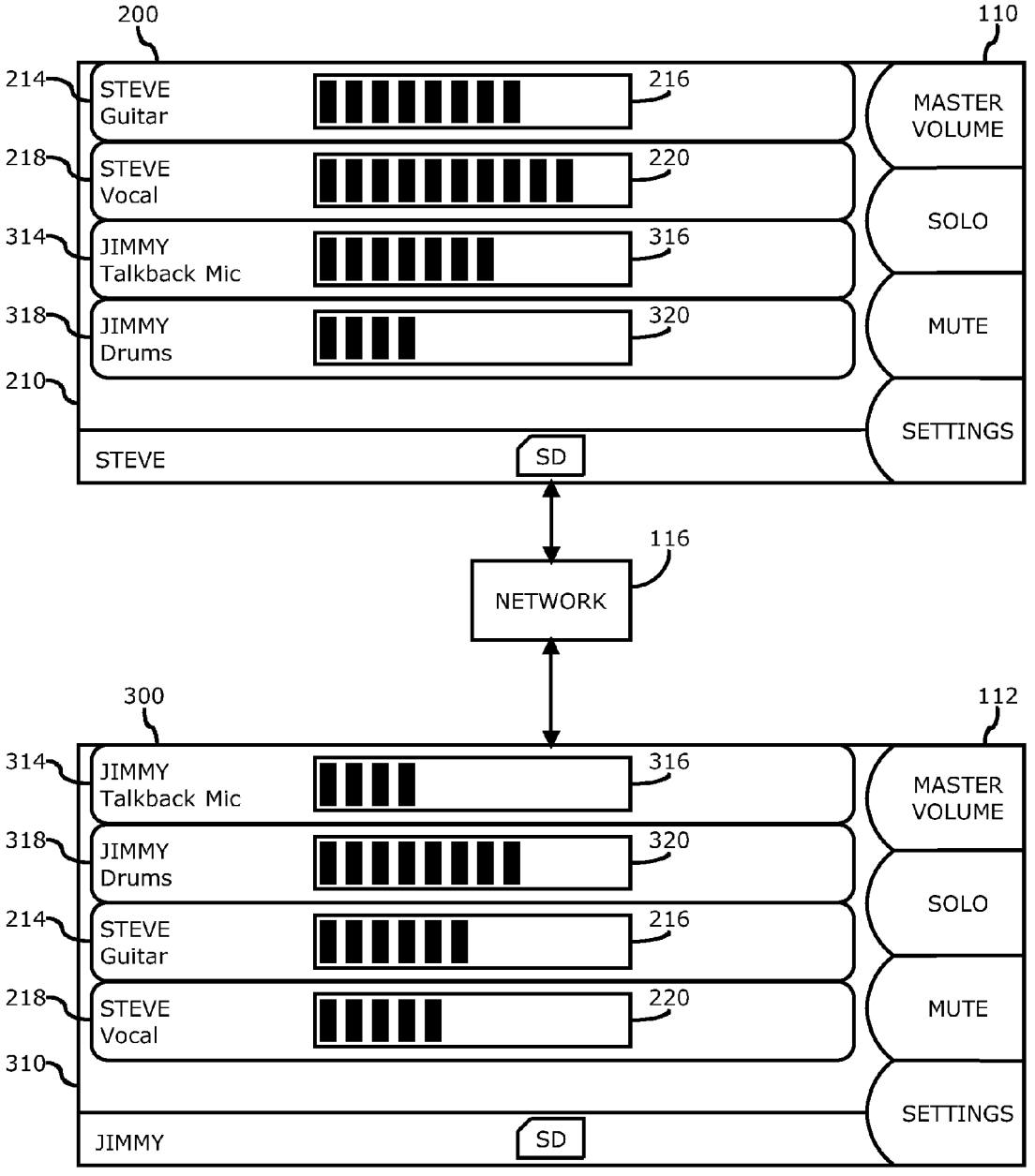

200
110
214
STEVE
Guitar
216
MASTER
VOLUME
218
STEVE
Vocal
220
SOLO
314
JIMMY
Talkback Mic
316
318
JIMMY
Drums
320
MUTE
210
SETTINGS
STEVE
SD
116
NETWORK
300
112
314
JIMMY
Talkback Mic
316
MASTER
VOLUME
318
JIMMY
Drums
320
SOLO
214
STEVE
Guitar
216
218
STEVE
Vocal
220
MUTE
310
SETTINGS
JIMMY
SD

FIG. 4

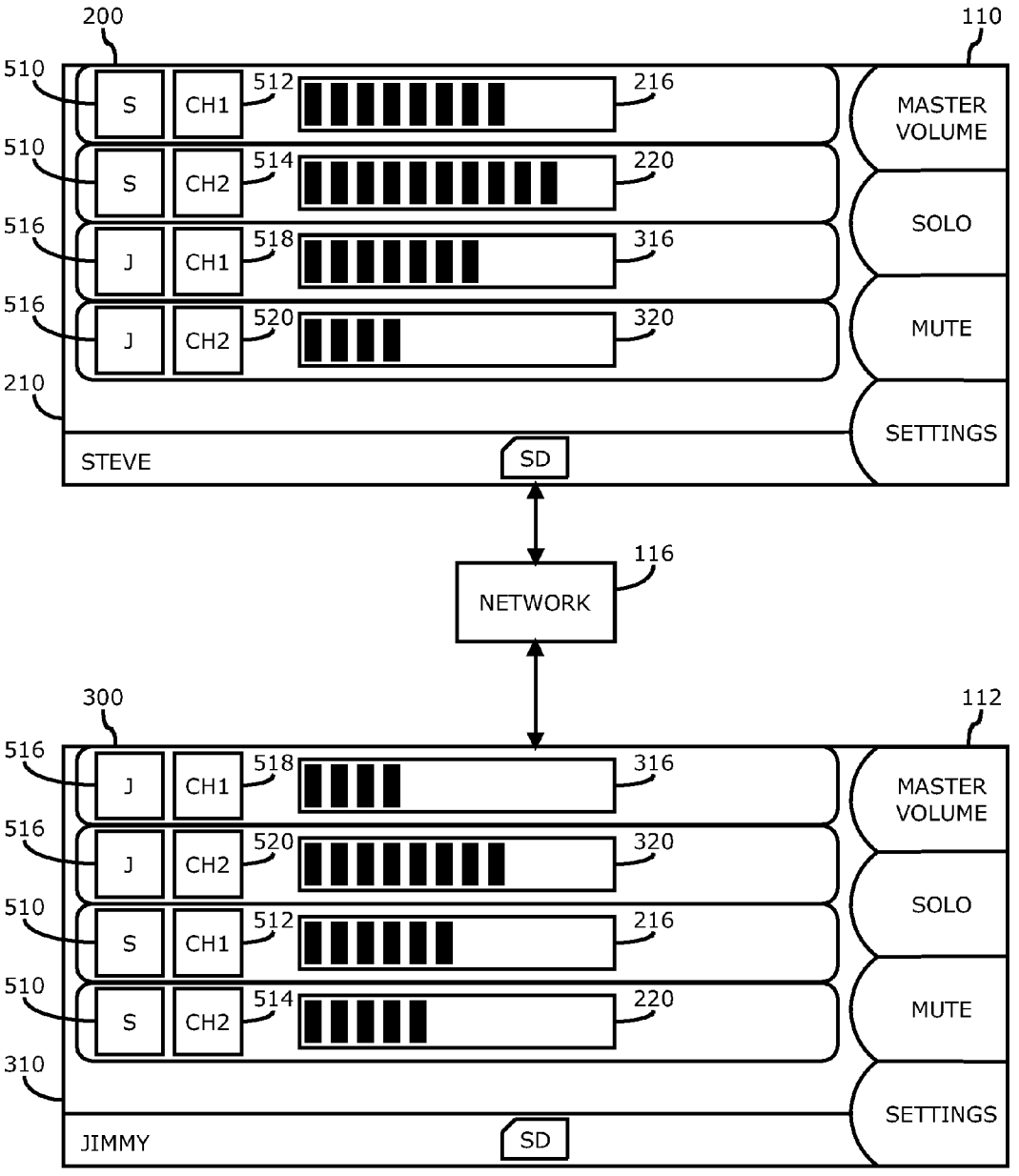

200
110
510
S
CH1
512
216
MASTER VOLUME
510
S
CH2
514
220
SOLO
516
J
CH1
518
316
516
J
CH2
520
320
MUTE
210
SETTINGS
STEVE
SD
116
NETWORK
300
112
516
J
CH1
518
316
MASTER VOLUME
516
J
CH2
520
320
SOLO
510
S
CH1
512
216
510
S
CH2
514
220
MUTE
310
SETTINGS
JIMMY
SD

FIG. 5

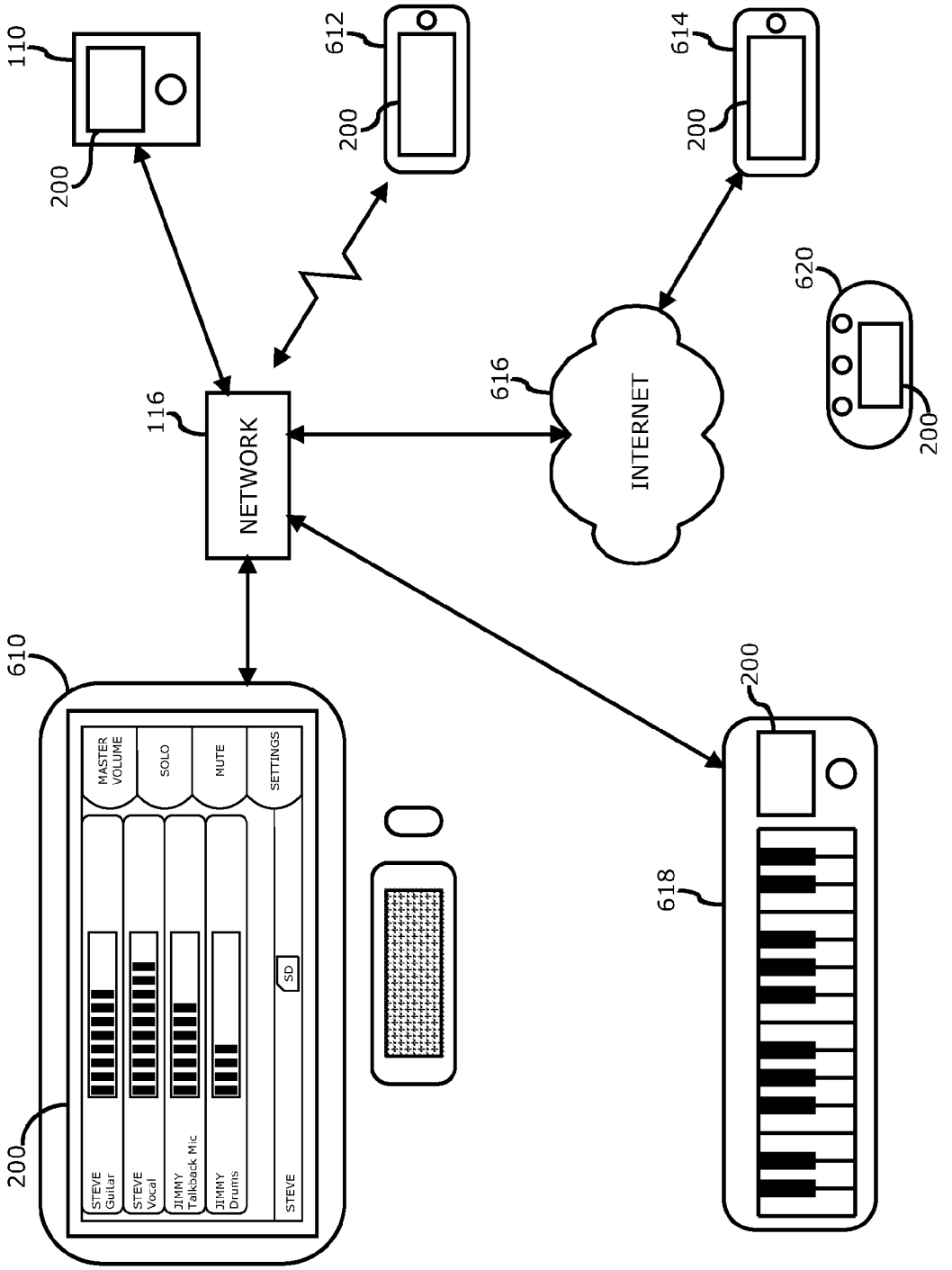

110
200
612
200
614
200
620
200
116
NETWORK
616
INTERNET
610
MASTER VOLUME
SOLO
MUTE
SETTINGS
STEVE Guitar
STEVE Vocal
JIMMY Talkback Mic
JIMMY Drums
STEVE
SD
200
618
200

FIG. 6

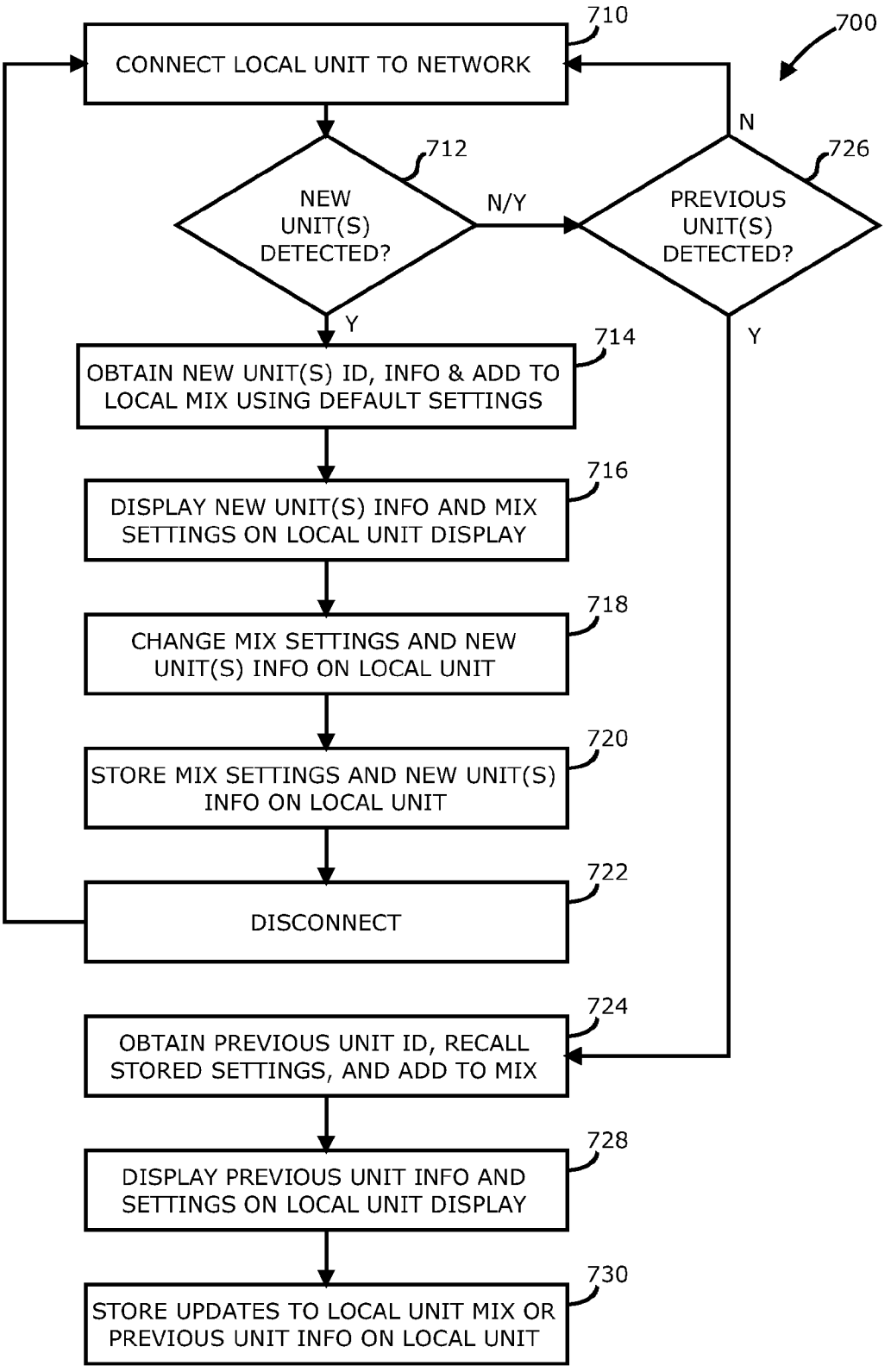

700
710
CONNECT LOCAL UNIT TO NETWORK
712
NEW UNIT(S) DETECTED?
N/Y
726
PREVIOUS UNIT(S) DETECTED?
N
Y
Y
714
OBTAIN NEW UNIT(S) ID, INFO & ADD TO LOCAL MIX USING DEFAULT SETTINGS
716
DISPLAY NEW UNIT(S) INFO AND MIX SETTINGS ON LOCAL UNIT DISPLAY
718
CHANGE MIX SETTINGS AND NEW UNIT(S) INFO ON LOCAL UNIT
720
STORE MIX SETTINGS AND NEW UNIT(S) INFO ON LOCAL UNIT
722
DISCONNECT
724
OBTAIN PREVIOUS UNIT ID, RECALL STORED SETTINGS, AND ADD TO MIX
728
DISPLAY PREVIOUS UNIT INFO AND SETTINGS ON LOCAL UNIT DISPLAY
730
STORE UPDATES TO LOCAL UNIT MIX OR PREVIOUS UNIT INFO ON LOCAL UNIT

FIG. 7

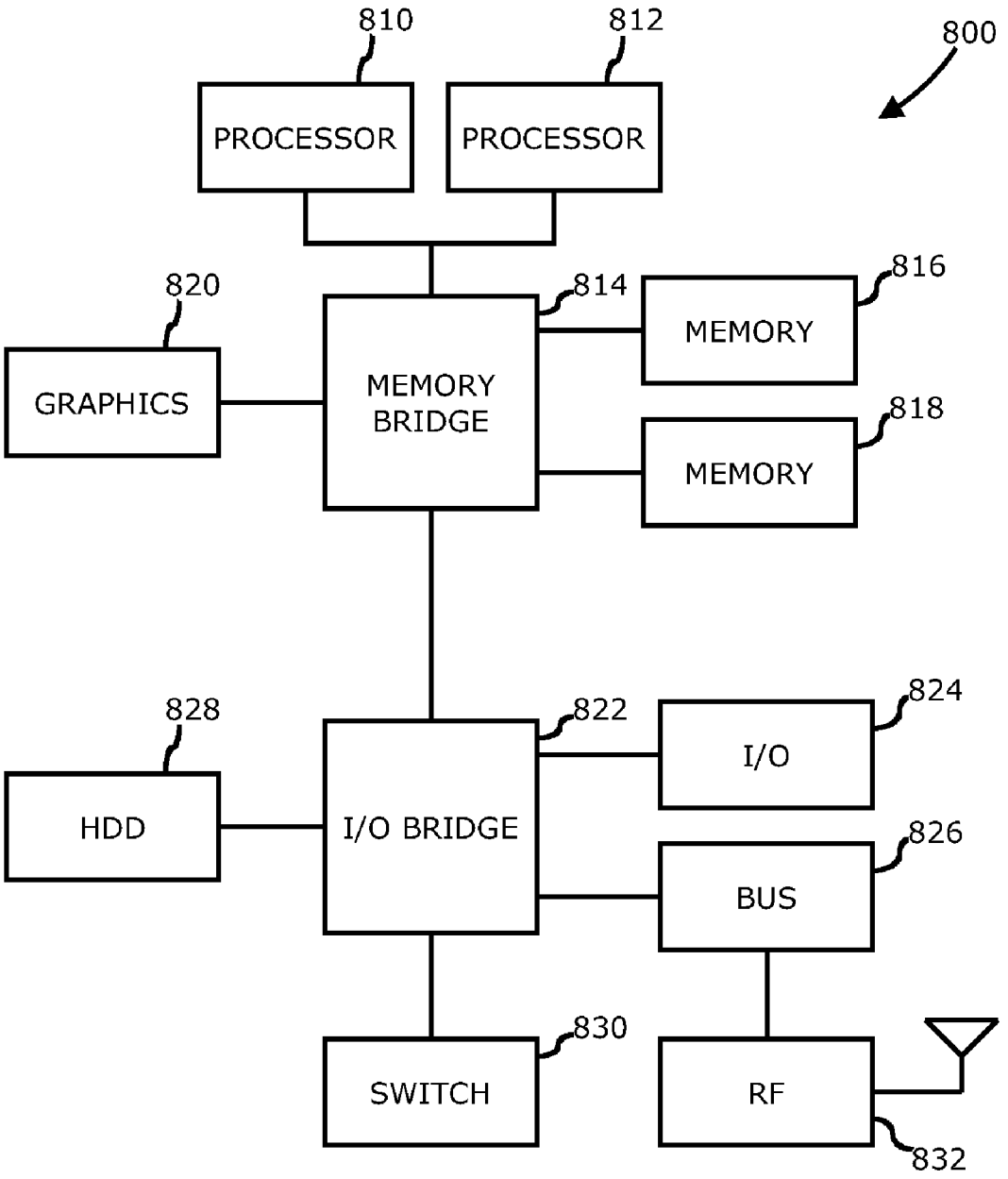

810
812
800
PROCESSOR
PROCESSOR
820
814
816
GRAPHICS
MEMORY BRIDGE
MEMORY
818
MEMORY
828
822
824
HDD
I/O BRIDGE
I/O
826
BUS
830
SWITCH
RF
832

FIG. 8

USER INTERFACE FOR NETWORK AUDIO MIXERS

CROSS-REFERENCE TO RELATED APPLICATIONS

The present application is a continuation-in-part of U.S. application Ser. No. 12/474,630 filed May 29, 2009 (pending) by inventors Mathias Stieler von Heydekampf and Lee Minich titled "Decentralized Audio Mixing and Recording". Said application Ser. No. 12/747,630 is hereby incorporated herein by reference in its entirety.

BACKGROUND

In an environment in which musicians hold rehearsals or recording sessions, or for general live performances and/or live recording, one or more mixers may be utilized to capture one or more audio signals of one or more musicians, vocalists, or other audio sources. Capturing the perfect mix may involve painstaking effort and/or skill on the part of the musician or engineer generating the mix. Furthermore, each musician or performer may desire to have his or her own personal mix that is unique to the other musicians or performers, for example when monitoring one's own personal performance in a band relative to the performance of the other musicians or performers. For multiple subsequent rehearsals, recording sessions or performances, a great deal of effort and time may be involved to recreate that unique, personal mix again which may detract from valuable time that could have otherwise been spent on the actual performance.

DESCRIPTION OF THE DRAWING FIGURES

Claimed subject matter is particularly pointed out and distinctly claimed in the concluding portion of the specification. However, such subject matter may be understood by reference to the following detailed description when read with the accompanying drawings in which:

FIG. **1** is a block diagram of multiple mixers coupled via a network in accordance with one or more embodiments;

FIG. **2** is a diagram of the display and user interface of a mixer in accordance with one or more embodiments;

FIG. **3** is a diagram of the displays of two mixers when not coupled via a network in accordance with one or more embodiments;

FIG. **4** is a diagram of the displays of the two mixers of FIG. **3** when the mixers are coupled via a network in accordance with one or more embodiments;

FIG. **5** is a diagram of alternative displays of the two mixers of FIG. **4** showing an alternative embodiment in which mixer information includes one or more displayed icons or images in accordance with one or more embodiments;

FIG. **6** is a diagram of various types of mixer units or other devices having mixer hardware and/or software in accordance with one or more embodiments;

FIG. **7** is a diagram of a method for connecting two or more mixers via a network and displaying and controlling mixer information via a user interface in accordance with one or more embodiments; and

FIG. **8** is a diagram of an information handling system capable of tangibly embodying a mixer and/or a user interface of a mixer in accordance with one or more embodiments.

It will be appreciated that for simplicity and/or clarity of illustration, elements illustrated in the figures have not necessarily been drawn to scale. For example, the dimensions of some of the elements may be exaggerated relative to other elements for clarity. Further, if considered appropriate, reference numerals have been repeated among the figures to indicate corresponding and/or analogous elements.

DETAILED DESCRIPTION

In the following detailed description, numerous specific details are set forth to provide a thorough understanding of claimed subject matter. However, it will be understood by those skilled in the art that claimed subject matter may be practiced without these specific details. In other instances, well-known methods, procedures, components and/or circuits have not been described in detail.

In the following description and/or claims, the terms coupled and/or connected, along with their derivatives, may be used. In particular embodiments, connected may be used to indicate that two or more elements are in direct physical and/or electrical contact with each other. Coupled may mean that two or more elements are in direct physical and/or electrical contact. However, coupled may also mean that two or more elements may not be in direct contact with each other, but yet may still cooperate and/or interact with each other. For example, "coupled" may mean that two or more elements do not contact each other but are indirectly joined together via another element or intermediate elements. Finally, the terms "on," "overlying," and "over" may be used in the following description and claims. "On," "overlying," and "over" may be used to indicate that two or more elements are in direct physical contact with each other. However, "over" may also mean that two or more elements are not in direct contact with each other. For example, "over" may mean that one element is above another element but not contact each other and may have another element or elements in between the two elements. Furthermore, the term "and/or" may mean "and", it may mean "or", it may mean "exclusive-or", it may mean "one", it may mean "some, but not all", it may mean "neither", and/or it may mean "both", although the scope of claimed subject matter is not limited in this respect. In the following description and/or claims, the terms "comprise" and "include," along with their derivatives, may be used and are intended as synonyms for each other.

Referring now to FIG. **1**, a block diagram of multiple mixers coupled via a network in accordance with one or more embodiments will be discussed. As shown in FIG. **1**, a mixing system **100** may comprise one or more mixers **110**, **112**, up to an Nth mixer **114**, generally referred to as units, coupled via network **116**. One or more of the mixers may include information stored thereon describing the network address of the mixer, for example a media access control (MAC) address or the like, the name of the mixer, and the name of one or more channels that the mixer is capable of handling. For purposes of discussion, one or more of the mixers will have two channels, channel 1 (CH 1) and channel 2 (CH 2), however the scope of the claimed subject matter is not limited in this respect wherein a mixer may have any number of channels.

In one or more embodiments, mixing system **100** may comprise a decentralized mixing system that may comprise an expandable, decentralized audio signal mixing system capable of utilizing networking technology for real-time, or near real-time, audio applications with integrated multi-track recording capability. Decentralized mixing system may comprise one or more mixers **110**, **112**, or **114** capable of coupling to network **116** to provide interconnectivity between two or more mixers **110**, **112**, or **114**. An example of such decentralized mixing system is shown in and described with respect to copending U.S. application Ser. No. 12/474,630 filed May 29, 2009 and which is incorporated herein by reference in its

entirety for any and all purposes. However, a decentralized mixing system is merely one example type of mixing system **100**, and the scope of the claimed subject matter is not limited in this respect.

In one or more embodiments, network **116** may comprise standard networking technology as such an interconnectivity backbone, wherein network may operate in compliance with one or more networking standards such as Ethernet, Fast Ethernet100BASE-T with Ethernet Audio Video Bridging (AVB) in accordance with an Institute of Electrical and Electronics Engineers (IEEE) standard such as IEEE 802.1, IEEE 802.1ak, IEEE 802.1AB, IEEE 802.1AS, IEEE 802.1D, IEEE 802.1Q, IEEE 802.1Qat, IEEE 802.1Qav, Universal Serial Bus (USB), IEEE 1394, and so on, although the scope of the claimed subject matter is not limited in this respect. In some embodiments, network **116** may comprise an audio network and/or bus such as a Dante audio network or the like type of connectivity protocol as merely one example, and the scope of the claimed subject matter is not limited in this respect. In one or more embodiments, at least a portion or all of network **116**, may comprise a wired link based network, and in one or more alternative embodiments, at least a portion or all of network **116** may comprise a wireless link based network. In embodiments where network **116** at least in part comprises a wireless link based network, network **116** may be in compliance with one or more wireless standards such as, for example, IEEE 802.11a, IEEE 802.11b, IEEE 802.11g, IEEE 802.11n, and so on, for example where network **124** comprises a wireless local area network (WLAN). Alternatively, network **116** may at least in part comprise a personal area network (PAN) such as a Bluetooth or Ultra-wide band (UWB) type network, Wireless Universal Serial Bus (WUSB), and/or in some embodiments network **116** may at least in part comprise a wireless wide area network (WWAN) such as a Third-Generation (3G) network, a Third Generation Partnership Project (3GPP) network, a Fourth-Generation (4G) network, a time division multiple access network, a code division multiple access network (CDMA) network, a wide-band code division multiple access (W-CDMA), a Worldwide Interoperability for Microwave Access (WiMAX) network, an IEEE 802.16 network, and so on. In addition to wireless communications, mixer **110** may implement wireless power and or wireless charging, for example to charge an internal battery of a mixer **110**, **112**, or **114** via an induction based charger. However, these are merely example standards for and/or implementations of network **116**, wired and/or wireless, and wired and/or wireless power or charging, and the scope of the claimed subject matter is not limited in this respect.

In one or more embodiments, network **116** may be any network capable of coupling any number of mixers, up to a given maximum number of network devices for the given network protocol. In one or more embodiments, network **116** may be a simple single wire network coupling two units or devices, or alternatively may include any type of network switches, hubs, routers, access points, and so on, and the scope of the claimed subject matter is not limited in this respect. If one or more of the mixers **110**, **112**, or **114** are coupled to one or more of the other one or more mixers via network **116**, the network address, unit name, channel name, and other information or data unique to a given mixer may be transmitted to one or more or all of the other mixers on network **116**. For example, when unit 1 and unit 2 couple to network **116**, the information unique to unit 2 will be transmitted to unit 1, and the information unique to unit 1 will be transmitted to unit 2. Likewise, for any N number of units, the information unique to all of the other N−1 units will be transmitted to a given unit, and vice-versa, so that all of the units on the network are capable of receiving all the unique information for all of the other units. The information transmitted includes but is not limited to the audio signals of the respective channels of the other units on the network. As will be discussed in further detail, below, mixers coupled to network **116** are capable of displaying, storing, mixing, recording, and/or otherwise handling the information and audio signals of the other units via a user interface of the mixer. An example display and user interface for one embodiment of a mixer is shown in and described with respect to FIG. **2**, below.

Referring now to FIG. **2**, a diagram of the display and user interface of a mixer in accordance with one or more embodiments will be discussed. FIG. **2** illustrates an example user interface **200** of one embodiment of a mixer **110** wherein the user interface **200** may include an electronic display **210** with a first region **214** corresponding to channel 1 of the mixer and second region **218** corresponding to channel 2 of the mixer. A third region **212** on the display **210** may include text indicating the name of the mixer corresponding to the UNIT 1 NAME as shown on mixer **110** in FIG. **1**. In this example, the name of the mixer **110** is displayed as "STEVE" who is the user or owner of this particular mixer **110**. Region **214** shows the text for the name of channel 1 of mixer **110** which corresponds to CH 1 NAME of mixer **110** of FIG. **1**. Likewise, region **218** shows the text for the name of channel 2 of mixer **110** which corresponds to CH 2 NAME of mixer **110** of FIG. **1**. For purposes of example, Steve has a guitar coupled to channel 1 of the mixer **110**, and a microphone for vocal coupled to channel 2 of the mixer **110**. Thus, the text of region **214** may be set to read "STEVE Guitar" and the text of region **218** may be set to read "STEVE Vocal". The mix level for Steve's guitar on channel 1 may be indicated in region **214** via level indicator **216**, and the mix level for Steve's vocals may be indicated in region **218** via level indicator **220**. The level for a given channel of mixer **110** may be set by selecting region **214** via a control knob **222** which may be utilized to highlight the channel 1 region **214** or the channel 2 region **218**. Once a channel region is highlighted, pushing down on control knob **222** may actuate a switch so that the user may adjust the mix level by twisting control knob **222**. Once a desired mix level is reached, the user may exit level selection mode by again pushing knob **222**. Alternatively, display **210** may include a touch screen overlay or input sensor so that a user may use a finger to touch a desired region of the display and make appropriate selections via touch and/or a combination of touch and actuation of a control knob **222** or button. Although the examples discussed herein show two channel mixers for purposes of example, additional regions on the display **210** may be utilized to show the additional channels.

User interface **200** may include various other ways for inputting information and/or controlling settings of mixer **110**. As merely some examples, display **210** may include other regions for selecting various functions, such as master volume region **224**, solo region **226**, mute region **226**, and/or settings region **230**. A respective actuator button **232**, **234**, **236**, or **238** may be disposed adjacent to a corresponding region **224**, **226**, **228**, or **230**, to activate the function of the corresponding region when pushed. Alternatively, the user may activate the functions by touching a desired region where display **210** includes touch display input. A record button **240** may be utilized to start and stop recording of the mix, for example to a memory card such as a secure digital (SD) card, the presence of which may be indicated in region **212** via an icon **244** or other text. A mute button **242** may be utilized to mute the output signal provided to an output of the mixer **110**. Various other buttons, actuators, controls, pots, sliders, and so

on may likewise be utilized to control any number of functions, levels, inputs, outputs, and so on, and the scope of the claimed subject matter is not limited in these respects. An example circuit architecture of a mixer **110** is shown in and described in said U.S. application Ser. No. 12/474,630 filed May 29, 2009 as but one of many examples.

Referring now to FIG. **3**, a diagram of the displays of two mixers when not coupled via a network in accordance with one or more embodiments will be discussed. The user interface **200** for Steve's mixer is shown as in FIG. **3** when Steve's mixer **110** is not connected to network **116**. Likewise, the user interface **300** for Jimmy's mixer is shown as in FIG. **3** when Jimmy's mixer **112** is also not connected to network **116**. In this situation, Steve's display **210** shows Steve's mix for Steve's guitar on channel 1 of mixer **110** in region **214** via level indicator **216** and for Steve's Vocal on channel 2 of mixer **110** in region **218** via level indicator **220**. Jimmy's display **310** shows Jimmy's mix for Jimmy's Talkback Mic on channel 1 of mixer **112** in region **314** via level indicator **316** and for Jimmy's Drums on channel 2 of mixer **112** in region **318** via level indicator **320**. Steve controls the mix for the two channels of his mixer **110**, and Jimmy controls the mix for the two channels of his mixer **112**.

Referring now to FIG. **4**, a diagram of the displays of the two mixers of FIG. **3** when the mixers are coupled via a network in accordance with one or more embodiments will be discussed. When Steve's mixer **110** and Jimmy's mixer **112** connect to network **116**, Steve's mixer **110** receives information from Jimmy's mixer **112**, and Jimmy's mixer **112** receives information from Steve's mixer. In such an arrangement, Jimmy's information is displayed on Steve's display **210**, and Steve's information is displayed on Jimmy's display. In one or more embodiments, Steve's mixer **110** displays Jimmy's channel 1 region **314** and channel 2 region **318** on Steve's display **210**. The audio signals from channel 1 and channel 2 of Jimmy's mixer **112** will also be transmitted via network **116** to Steve's mixer **110** so that Steve can hear and monitor Jimmy's channels with Steve's mixer **110** wherein Steve may add them to Steve's mix. Steve may independently control the mix of Jimmy's channels with Steve's mixer **110** as Steve controls his own channels. Likewise, in one or more embodiments, Jimmy's mixer **112** displays Steve's channel 1 region **214** and channel 2 region **218** on Jimmy's display **310**. The audio signals from channel 1 and channel 2 of Steve's mixer **110** will also be transmitted via network **116** to Jimmy's mixer so that Jimmy can hear and monitor Steve's channels with Jimmy's mixer **112** wherein Jimmy may add Steve's channels to Jimmy's mix. Jimmy may independently control the mix of Steve's channels with Jimmy's mixer **112** in the same manner as Steve controls his own channels.

In one or more embodiments, the first time Steve's mixer **110** sees Jimmy's mixer on the network, the channels of Jimmy's mixer **112** may be set to a default setting in the mix, for example, always at a 50% level, or always 10% lower than Steve's lowest level. Subsequently, as Steve changes the mix level for Jimmy's channels, those levels may be stored in a memory card or other memory of Steve's mixer **110** so that when Steve's mixer **110** connects to Jimmy's mixer **112** in the future, Steve's mixer may recall the stored settings for Jimmy's channel and automatically add Jimmy's channels to the mix at the previously stored settings instead of the default mix settings. Furthermore, Steve may rename or otherwise change the information corresponding to Jimmy's mixer **112** to something different than the name that Jimmy provides for his settings for Jimmy's mixer. For example, Steve may rename Jimmy's "Talkback Mic" name for Jimmy's channel 1 to "Vocal" which may be stored as such in Steve's mixer **110**. In such an arrangement, Jimmy's region **314** may display "JIMMY Talkback Mic" on Jimmy's display **310**, but region **314** may display "JIMMY Vocal" on Steve's display **210**.

In particular, in one or more embodiments, it should be noted that Steve may have his own independent mix settings on Steve's mixer **110** for channel 1 and channel 2 of Steve's mixer **110** and for channel 1 and channel 2 of Jimmy's mixer **112**. Likewise, Jimmy may have his own independent mix settings on Jimmy's mixer **112** for channel 1 and channel 2 of Jimmy's mixer and for channel 1 and channel 2 of Steve's mixer **110**. To illustrate this, as shown in FIG. **4**, Steve's display **210** shows Steve's mix wherein Steve's Guitar is set to 8 volume bars at level indicator **216**, Steve's Vocal is set to 10 volume bars at level indicator **220**, Jimmy's Talkback Mic is set to 7 volume bars at level indicator **316**, and Jimmy's Drums are set to 4 volume bars at level indicator **320**. However, Jimmy may have a different mix at his mixer **112** such that Jimmy's display **310** shows Jimmy's mix wherein Jimmy's Talkback Mic is set to 4 volume bars at level indicator **316**, Jimmy's Drums are set to 8 volume bars at level indicator **320**, Steve's Guitar is set to 6 volume bars at level indicator **216**, and Steve's Vocal is set to 5 volume bars at level indicator **220**. Note that the volume bars in the level indicators represent the volume level for that channel wherein more volume bars represent a higher mix level and fewer volume bars represent a lower mix level. Steve may save Steve's mix on his mixer **110** so that when other previously connected units connect to Steve's mixer **110** again in the future, the channels of the other units may automatically be added back to Steve's mixer **110** at the previously stored levels. Likewise, Jimmy may save Jimmy's mix on his mixer **112** so that when other previously connected units connect to Jimmy's mixer **112** in the future, the channels of the other units may automatically added back to Jimmy's mixer **112** at the previously stored levels. It should be noted that if the display **210** of a local unit does not have enough area to show all of the channels for all the units to which the local unit is connected, additional pages of the display **210** may be used to show the information of the other units which may be accessed by the user, for example via control knob **222**. Although FIG. **4** shows an example embodiment in which a local unit may obtain, display, control, and/or otherwise process the information from one or more other units via user interface **200** or user interface **300**, multiple other variations fall within the scope of the claimed subject matter. For example, in alternative embodiments, the information obtained from other units that is displayed and processed by a local unit may include icons, images, and/or video in addition to or instead of text. Such an alternative embodiment is shown in and described with respect to FIG. **5**, below.

Referring now to FIG. **5**, a diagram of alternative displays of the two mixers of FIG. **4** showing an alternative embodiment in which mixer information includes one or more displayed icons or images in accordance with one or more embodiments will be discussed. In the embodiment shown in FIG. **5**, instead of using text to identify a given unit name or a channel name, an icon, image, graphic, or video clip may be utilized in addition to or in lieu of using text. For example, Steve's mixer **110** may be identified with Steve's picture **510**. Likewise, Jimmy's mixer **112** may be identified with a Jimmy's picture **516**. As another example, Steve's guitar on channel 1 may be identified with a guitar icon **512**, and Steve's vocal on channel 2 may be identified with a microphone icon **514**. Likewise, Jimmy's Talkback Mic on channel 1 may be identified with a microphone icon **518**, and Jimmy's Drum on channel 2 may be identified with a drum icon **520**.

Pictures of the owners or users of a given mixer may be obtained and stored by that user and then transmitted to other units via network **116**. Alternatively, Steve may take a picture of Jimmy and load the picture onto Steve's mixer **110** for recall by Steve's mixer when Jimmy's mixer **112** connects to Steve's mixer **110** via network **116**. Likewise, icons for various instruments may stored in any one or more units and transmitted to any one or other units via network **116** and selected by the user in the same manner as a user would name his or someone else's unit on his own unit. In some embodiments, the icon or image may be an avatar type image created by a user for himself or for another user to be stored on his local machine. Such an avatar may be a cartoon or cartoon like character representing the user of a particular machine. The type of identifier such as text, icon, image, picture, avatar, video clip, and so on may be selected for example via a settings function of the mixer.

Referring now to FIG. **6**, a diagram of various types of mixer units or other devices having mixer hardware and/or software in accordance with one or more embodiments will be discussed. FIG. **6** shows that the mixing functions including a user interface as shown in and described herein may be utilized by any various type of electronic device capable of connecting to other devices via network **116**. For example, the user interface **200** and/or mixing functions of a mixer such as mixer **110**, **112**, or mixer **114** may be integrated into a personal computer **610** via software and/or hardware installed in or coupled to personal computer **610** including a networking interface. Similarly, user interface **200** may be integrated into a standalone mixer **110** capable of connecting to network **116**, a wired or wirelessly connected portable device **612** such as a music player, phone tablet, pad, netbook, and so on, or wired or wirelessly connected device **614** coupled to network **116** via another network such as the Internet **616**, a digital instrument or amplifier modeler **620** capable of coupling to network **116**, and/or an instrument **618** such as a keyboard, synthesizer or the like, all capable of coupling to one or more other units via network, either wired or wirelessly or directly or via another network, generally as shown in and described in FIG. **1** and incorporating a user interface **200** as shown in and described herein. It should be noted that the diagram of FIG. **6** is not limiting on how any one type of device may incorporate user interface **200** or how any one type of device may couple to one or more other devices or units via network **116**, and the scope of the claimed subject matter is not limited in these respects. In general, the operation of a given unit is shown in and described with respect to FIG. **7**, below, for one example embodiment for connecting two or more units or devices.

Referring now to FIG. **7**, a diagram of a method for connecting two or more mixers via a network and displaying and controlling mixer information via a user interface in accordance with one or more embodiments will be discussed. The method **700** of FIG. **7** is discussed in general for a local unit that is capable of coupling with one or more other units via a network. It should be noted that although FIG. **7** shows one particular order and number of the blocks of method **700**, various other orders and numbers of blocks, including fewer or more blocks, may likewise be utilized in one or more alternative embodiments, and the scope of the claimed subject matter is not limited in these respects. The local unit may connect to network **116** at block **710**. A determination may be made at block **712** whether one or more new units are detected via network **116**. A new unit may comprise a unit that the local unit has not previously connected to In the event one or more new units are detected, the local unit may obtain at block **714** an identifier such as a network or MAC address, and/or other information for the one or more new units including the unit name, channel names, and/or channel signals from the other new units wherein the signals from new units may be added to the local mix of the local unit using default settings for new units. The information and/or mix settings of the one or more new units may be displayed on a display of the local unit at block **716**. Using the user interface of the local unit, at block **718** the user of the local unit may change the mix setting and/or other information for the one or more new units on the local unit. Further using the user interface of the local unit, at block **720** the user of the local unit may store the mix settings and/or other information of the one or more new units on the local unit for example to a storage device or memory device of the local unit or otherwise coupled to the local unit.

At some point, either the local unit or the one or more other units may disconnect from the network **116** and/or from one another at block **722**. In the event the local unit subsequently connects to network **116** at block **710**, in the event that no new units are detected at block **712** and one or more previous units are detected at block **726**, or alternatively new units are detected at block **712** and one or more previous units are detected at block **726**, for the one or more previous units, the local mixer obtains the identifier at block **724** for the one or more previous units via network **116**, and based at least in part on the identifier recalls the stored settings for the corresponding one or more previous units and adds the previous units to the local mix of the local unit based at least in part on the recalled stored settings. A previous unit may mean another unit that the local unit has already connected to, either via the present network **116** or via another network, at a previous time. The information for the one or more previous units may be displayed on the display of the local unit at block **728**. Using the user interface of the local unit, at block **730** the user of the local unit may then optionally make further changes or updates to the mix and/or other information for the one or more previous units and store the changes or updates to the local unit mix on the local unit or a storage device or memory device in or coupled to the local unit. Method **700** may continue accordingly as the local unit connects to or disconnects from network and detects one or more new units and/or one or more previous units. In the event the local unit does not detect any new units or any previous units, the local unit may stay coupled to network **116** until one or more new or previous units are detected, or until the local unit disconnects from network **116**.

Referring now to FIG. **8**, a block diagram of an information handling system capable of tangibly embodying a mixer and/or a user interface of a mixer in accordance with one or more embodiments will be discussed. Information handling system **800** of FIG. **8** may tangibly embody one or more of any of mixers or units **110**, **112**, or **116** of system **100** as shown in and described with respect to FIG. **1**, or any of ht devices of FIG. **6** such as personal computer **610**, mixer **110**, device **612**, device **614**, instrument **618**, and/or modeler **620**. Although information handling system **800** represents one example of several types of computing platforms, information handling system **800** may include more or fewer elements and/or different arrangements of elements than shown in FIG. **8**, and the scope of the claimed subject matter is not limited in these respects.

Information handling system **800** may comprise one or more processors such as processor **810** and/or processor **812**, which may comprise one or more processing cores. One or more of processor **810** and/or processor **812** may couple to one or more memories **816** and/or **818** via memory bridge **814**, which may be disposed external to processors **810** and/or **812**, or alternatively at least partially disposed within one or

more of processors **810** and/or **812**. Memory **816** and/or memory **818** may comprise various types of semiconductor based memory, for example volatile type memory and/or non-volatile type memory. Memory bridge **814** may couple to a graphics system **820** to drive a display device (not shown) coupled to information handling system **800**.

Information handling system **800** may further comprise input/output (I/O) bridge **822** to couple to various types of I/O systems. I/O system **824** may comprise, for example, a universal serial bus (USB) type system, an IEEE 1394 type system, or the like, to couple one or more peripheral devices to information handling system **800**. Bus system **826** may comprise one or more bus systems such as a peripheral component interconnect (PCI) express type bus or the like, to connect one or more peripheral devices to information handling system **800**. A hard disk drive (HDD) controller system **828** may couple one or more hard disk drives or the like to information handling system, for example Serial ATA type drives or the like, or alternatively a semiconductor based drive comprising flash memory, phase change, and/or chalcogenide type memory or the like. Switch **830** may be utilized to couple one or more switched devices to I/O bridge **822**, for example Gigabit Ethernet type devices or the like. Furthermore, as shown in FIG. **8**, information handling system **500** may include a radio-frequency (RF) block **832** comprising RF circuits and devices for wireless communication with other wireless communication devices and/or via wireless networks such as network **116** of FIG. **1**, although the scope of the claimed subject matter is not limited in this respect.

In one or more embodiments, information handling system **800** may include a user interface such as a graphical user interface (GUI) that may refer to a program interface that utilizes displayed graphical information to allow a user to control and/or operate a computing platform and/or the like. A pointer may refer to a cursor and/or other symbol that appears on a display screen that may be moved and/or controlled with a pointing device to select objects, and/or input commands via a graphical user interface of a computing platform and/or the like. A pointing device may refer to a device used to control a cursor, to select objects, and/or input commands via a graphical user interface of a computing platform and/or the like. Pointing devices may include, for example, a mouse, a trackball, a track pad, a track stick, a keyboard, a stylus, a digitizing tablet, and/or similar types of devices. A cursor may refer to a symbol and/or a pointer where an input selection and/or actuation may be made with respect to a region of in a graphical user interface. In one embodiment, content reflow may refer to where the contents of a document may be rearranged to alter the layout, order, and/or readability of the content of the document. In one or more embodiments, transient may refer to being in a state for a brief and/or temporary period of time, and/or passing with time and/or a temporary state of being. In one or more embodiments, an icon may refer to a smaller sized picture that may represent an object, a file, and/or a program, and in some embodiments, an icon may be a thumbnail, wherein a thumbnail may refer to a smaller sized image and/or picture of an object, a file, and/or a program, and/or a portion thereof. However, these are merely example definitions of terms relating to graphical user interfaces and/or computing platforms and/or the like, and the scope of claimed subject matter is not limited in this respect.

Although the claimed subject matter has been described with a certain degree of particularity, it should be recognized that elements thereof may be altered by persons skilled in the art without departing from the spirit and/or scope of claimed subject matter. It is believed that the subject matter pertaining to a user interface for network audio mixers and/or many of its attendant utilities will be understood by the forgoing description, and it will be apparent that various changes may be made in the form, construction and/or arrangement of the components thereof without departing from the scope and/or spirit of the claimed subject matter or without sacrificing all of its material advantages, the form herein before described being merely an explanatory embodiment thereof, and/or further without providing substantial change thereto. It is the intention of the claims to encompass and/or include such changes.

What is claimed is:

1. A method, comprising:
connecting a first mixer to a network;
if a second mixer is detected on the network,
obtaining an identifier for the second mixer;
adding one or more audio signals from the second mixer to a mix of the first mixer; and
storing a mix setting for the second mixer on the first mixer; and
if the second mixer is subsequently connected to the first mixer,
obtaining the identifier for the second mixer;
recalling the stored mix setting for the second mixer based at least in part on the identifier; and
adding one or more audio signals from the second mixer to a present mix of the first mixer based at least in part on the recalled mix setting.

2. A method as claimed in claim **1**, further comprising:
displaying information for the second mixer on a display of the first mixer, the information for the second mixer including a name of the second mixer, a name for one or more channels of the second mixer, or a signal level for one or more signals of the one or more channels, or combinations thereof.

3. A method as claimed in claim **1**, further comprising:
storing information for the second mixer in the first mixer; and
if the second mixer is subsequently connected to the first mixer,
recalling the stored information for the second mixer; and
displaying the recalled information for the second mixer on a display of the first mixer.

4. A method as claimed in claim **2**, wherein the information comprises a picture, and icon, a graphic, an avatar, or a video clip, or combinations thereof.

5. A method as claimed in claim **3**, wherein the information comprises a picture, and icon, a graphic, an avatar, or a video clip, or combinations thereof.

6. A method as claimed in claim **1**, further comprising recording the mix or the present mix of the first mixer, wherein the mix or the present mix of the first mixer includes one or more audio signals of the first mixer and one or more audio signals of the second mixer transmitted to the first mixer via the network.

7. A method as claimed in claim **1**, wherein the identifier comprises a network identifier or a media access control identifier, or combinations thereof.

8. A method as claimed in claim **1**, further comprising applying a mix setting at the first mixer to one or more audio signals of the second mixer independent of a mix setting at the second mixer of the one or more audio signals of the second mixer.

9. An apparatus, comprising:
means for connecting a first mixer to a network;
if a second mixer is detected on the network,
means for obtaining an identifier for the second mixer;

means for adding one or more audio signals from the second mixer to a mix of the first mixer; and

means for storing a mix setting for the second mixer on the first mixer; and

if the second mixer is subsequently connected to the first mixer,

means for obtaining the identifier for the second mixer;

means for recalling the stored mix setting for the second mixer based at least in part on the identifier; and

means for adding one or more audio signals from the second mixer to a present mix of the first mixer based at least in part on the recalled mix setting.

10. An apparatus as claimed in claim **9**, further comprising:

means for displaying information for the second mixer on a display of the first mixer, the information for the second mixer including a name of the second mixer, a name for one or more channels of the second mixer, or a signal level for one or more signals of the one or more channels, or combinations thereof.

11. An apparatus as claimed in claim **9**, further comprising:

means for storing information for the second mixer in the first mixer; and

if the second mixer is subsequently connected to the first mixer,

means for recalling the stored information for the second mixer; and

means for displaying the recalled information for the second mixer on a display of the first mixer.

12. An apparatus as claimed in claim **10**, wherein the information comprises a picture, and icon, a graphic, an avatar, or a video clip, or combinations thereof.

13. An apparatus as claimed in claim **11**, wherein the information comprises a picture, and icon, a graphic, an avatar, or a video clip, or combinations thereof.

14. An apparatus as claimed in claim **9**, further comprising means for recording the mix or the present mix of the first mixer, wherein the mix or the present mix of the first mixer includes one or more audio signals of the first mixer and one or more audio signals of the second mixer transmitted to the first mixer via the network.

15. An apparatus as claimed in claim **9**, wherein the identifier comprises a network identifier or a media access control identifier, or combinations thereof.

16. An apparatus as claimed in claim **9**, further comprising means for applying a mix setting at the first mixer to one or more audio signals of the second mixer independent of a mix setting at the second mixer of the one or more audio signals of the second mixer.

17. A system, comprising:

a processor and a memory coupled to the processor; and

a display coupled to the processor to display information stored in memory, wherein the processor is configured to:

connect the system to a network as a first system;

if a second system is detected on the network, obtain an identifier for the second system, add one or more audio signals from the second system to a mix of the first system, and store a mix setting for the second system on the first system; and

if the second system is subsequently connected to the first system, obtain the identifier for the second information handling system, recall the stored mix setting for the second system based at least in part on the identifier, and add one or more audio signals from the second system to a present mix of the first system based at least in part on the recalled mix setting.

18. A system as claimed in claim **17**, wherein the processor is further configured to display information for the second system on the display, the information for the second system including a name of the second system, a name for one or more channels of the second system, or a signal level for one or more signals of the one or more channels, or combinations thereof.

19. A system as claimed in claim **17**, wherein the processor is further configured to:

store information for the second system in the memory; and

if the second system is subsequently connected to the first system, recall the stored information for the second system from the memory, and display the recalled information for the second system on the display.

20. A system as claimed in claim **19**, wherein the information comprises a picture, and icon, a graphic, an avatar, or a video clip, or combinations thereof.

* * * * *